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ONTARIO

MINISTRY OF THE ENVIRONMENT

WATER POLLUTION SURVEY

# of the

VILLAGE OF PLANTAGENET

COUNTY OF PRESCOTT

1972

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Environment Ontario

WATER POLLUTION SURVEY
OF THE
VILLAGE OF PLANTAGENET
IN THE
COUNTY OF PRESCOTT

DISTRICT ENGINEERS SECTION
SANITARY ENGINEERING BRANCH
1972

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INTRODUCTION

Information on the nature of water pollution in the Village of Plantagenet and the need for its prevention and control is provided in this report. To completely assess the quality of water in the South Nation River and its tributary at this point, as well as storm sewer discharges within the municipality, a monitoring programme was commenced by the district field staff in 1966.

Recommendations are made concerning the abatement of conditions which adversely affect water quality. During the initial stages of this survey interviews were held with both municipal and local health officials.

VILLAGE OF PLANTAGENET

Plantagenet is located in Prescott County, approximately 40 miles east of Ottawa. The South Nation River flows in a northerly direction through the village and thence in a north-westerly direction for six (6) miles to its confluence with the Ottawa River.

According to the 1971 Municipal Directory, the population is 888. Since Plantagenet was incorporated as a Village in January, 1963, the population has fluctuated to some extent both above and below the present population. The area of the Village, estimated at 1,700 acres, includes the former Police Village of Plantagenet and the Community of Plantagenet Springs within its boundaries.

WATER SUPPLY

The village receives its water from a series of springs and wells located north of the village and one well located in the southern section of the village. Problems associated with both quality and quantity have been experienced with the system for several years. It is understood that this system supplies practically all the dwellings in the village, the Plantagenet Creamery, the District High School, St. Paul's Separate School and several farms, both within and outside the village.

PROPOSED WATER WORKS

A provincial water works program, that will utilize the South Nation River as a source of supply, with the intake to be located at the upstream village limits, has been proposed and the design of the system has acquired technical approval of this Ministry. This proposed system is intended to replace the existing one which is considered to be inadequate as outlined above.

STORM DRAINAGE

Surface run-off is directed by a network of sewers and ditches to the South Nation River.

SANITARY WASTE DISPOSAL

The provision of adequate private sub-surface waste disposal systems has not been achieved to any considerable degree, due in part no doubt, to rather difficult soil conditions.

The network of storm sewers have, obviously, been utilized to relieve many of the malfunctioning systems, as confirmed by the sample results discussed in the following section of this report. A sewage works offers the only apparent solution to this problem.

INDUSTRIAL WASTE DISPOSAL

All process wastes and cooling water flows from the Plantagenet Creamery, estimated to be approximately 21,000 gallons per day by our Industrial Wastes Branch are directed without the benefit of any treatment, via a drainage ditch, to the South Nation River. It is understood that the firm has signed an agreement with the municipality to discharge their wastes to the proposed sewage works.

SAMPLING PROCEDURE

Bacteriological and chemical samples were obtained from pertinent locations on the South Nation River, the local creek and municipal outfalls and drainage ditches. The bacteriological samples were analysed at the Regional Health Laboratory in Ottawa, while the chemical analyses were performed at the OWRC laboratory.

SAMPLE RESULTS

The laboratory analyses sample results, together with an interpretation of the various analyses employed and a map showing sampling locations are appended to this report.

OUTFALLS

Sampling Station SN 7 - 995

A small drainage ditch which empties into the South Nation River north of the CPR bridge receives storm drainage, heavily contaminated with sanitary wastes, from the old community of Plantagenet Springs surrounding the railway station at the extreme southerly end of the Village. The laboratory analyses results confirm the visible evidence of the contaminated nature of the flows discharging from a sewer to this ditch.

Sampling Station SN 6 - 85

A sewer, serving a localized area surrounding Nation Street discharges heavily contaminated flows, as evidenced in the laboratory analyses results to the South Nation River at the end of Nation Street.

Sampling Station SN 6 - 65

A sewer, serving the Concession Street area discharges to the South Nation River at the rear of the Royal Bank Building. Heavily contaminated flows were noted throughout the period of sampling, with an excessively high concentration of 5 day BOD reported for October 15th, 1969. This excessive value can be attributed to the flow of blood noted discharging on this date, presumably as the result of poultry or livestock slaughtering in the vicinity.

Sampling Station SN 6 - 45

A sewer which discharged to the east bank of the river at the north side of old Highway No. 17 bridge had a very low flow until April 1968. Following that period no flow was noted due to either a collapse of the sewer or diversion of the flow to a neighbouring sewer. No appreciable amount of contamination was in evidence in the laboratory analyses sample results.

Sampling Station SN 6 - 35

This sewer which serves the area of Jessops Falls Road between the creamery and old Highway #17 discharges heavily contaminated flows to the east bank of the South Nation River.

Sampling Station SN 6 - 29I

This drainage ditch originating in the vicinity of the Plantagenet Creamery receives the untreated wastes discharges from outfalls from the creamery and conveys them to the east bank of the South Nation River. It has been reported that this firms daily water requirements amount to 21,000 gallons, and it can therefore be assumed that their daily waste flow would be equivalent to this amount.

Sampling Station SN 6 - 2S

This sewer which serves the Main Street area carries a fairly substantial flow of heavily contaminated waste flows to the west bank of the South Nation River immediately downstream of the tip of the Island.

SURFACE WATERS

Sampling Station SN 8 - 0

The South Nation River was sampled at the Canadian Pacific Railway Bridge at the upstream village limits, where water quality in general was within our objectives.

Sampling Station No. 3

Sailine Creek was sampled at the upstream village limits where the BOD values occasionally exceeded our objectives. This could be attributed to agricultural operations upstream.

Sampling Station No. 7

Sailine Creek was also sampled near its confluence with the South Nation River where some increase in suspended solids and total coliform values is noted. Since no known outfalls from the village discharge to this creek the higher values might be attributed to farm operations along the creek banks in this area.

Sampling Station SN 5 - 8

The South Nation River was sampled near the downstream village limits where substantial increases in total and faecal coliform organisms over those reported in the upstream sample results are noted. This degradation of stream quality can be attributed to the significant volumes of heavily contaminated waste flows discharging to the river from the municipal sewer outfalls and the creamery.

PROPOSED SEWAGE WORKS

A provincial sewage works to serve the Village of Plantagenet and Plantagenet Creamery has reached the final design stage and it is anticipated that construction of the works will commence in the spring of 1973.

SUMMARY

A water pollution survey of the Village of Plantagenet was performed. Significant volumes of heavily contaminated wastes were found in five (5) sewer outfalls and a drainage ditch from the Plantagenet Creamery. Samples from Sailine Creek which flows through the westerly limits of the village displayed a limited amount of bacterial contamination which is attributed to agricultural operations along its banks. The substantial increase in bacteriological levels in the South Nation River downstream of the Village is attributed to the effects of the heavily comtaminated waste flows that have access to the river through the above mentioned sewer outfalls and the ditch from the creamery.

Construction of a provincial sewage works to serve all the problem areas in the village and the creamery is expected to commence in the spring of 1973. A provincial water works program designed to replace the existing, inadequate system has reached the design stage at this time.

RECOMMENDATIONS

The contaminated waste discharges noted in the storm drainage facilities in the Village of Plantagenet should be eliminated.

Prepared by: A. D. McConnell

A. D. McConnell, Technician,
District Engineers Section,
Sanitary Engineering Branch.

SIGNIFICANCE OF LABORATORY ANALYSES

Bacteriological Examination

The presence of coliforms indicates pollution from human or animal excretment, or from some non-faecal forms. It is the opinion of the O.W.R.C. that the presence of coliforms in a watercourse should not exceed 1000 organisms per 100 millilitres of water.

The Membrane Filter (MF) technique is now employed to obtain a direct enumeration of coliform organisms at the Department of Health Laboratories and they report both Total Coliform Organisms (TC) and Faecal Coliform Organisms (FC).

Sanitary Chemical Analyses

Biochemical Oxygen Demand (BOD)

Biochemical Oxygen Demand is reported in parts per million (ppm) and is an indication of the amount of oxygen required for the stabilization of the decomposable organic or chemical matter in the water. The completion of the laboratory test requires five days, under the controlled incubation temperature of 20^{o} Centigrade.

The O.W.R.C.'s objectives for surface water quality is an upper' limit of four (4) ppm.

Solids

The value for solids, expressed in parts per million (ppm) is the sum of the values for the suspended and the dissolved matter in the water. The concentration of suspended solids is generally the most significant of the solids analysis with regard to surface water quality.

The effects of suspended solids in water are reflected in difficulties associated with water purification, depositions in streams and injury to the habitat of fish.

APPENDIX I

VILLAGE OF PLANTAGENET

WATER POLLUTION SURVEY

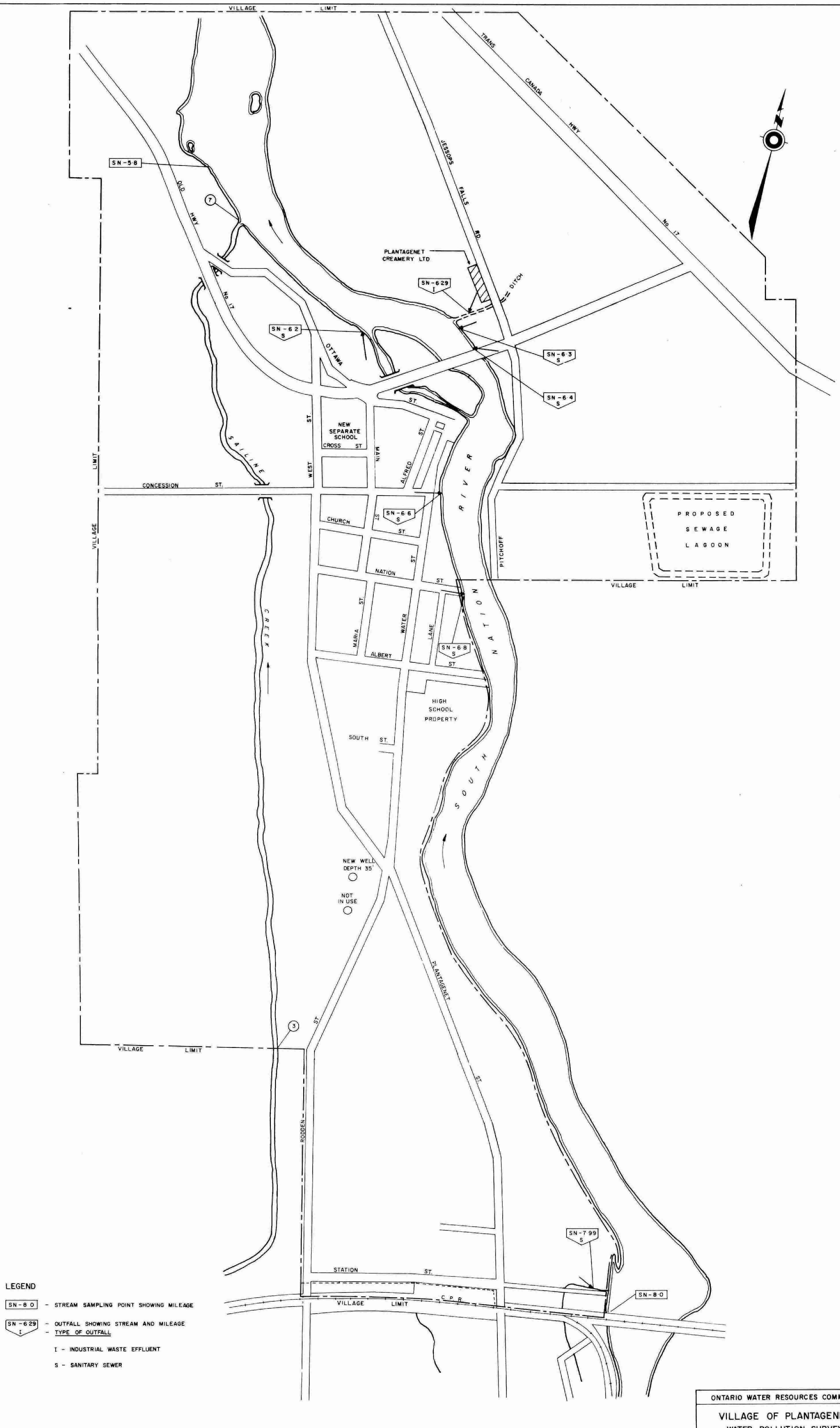
SAMPLE POINT	DESCRIPTION	DATE	5-DAY BOD	SOLIDS			COLIFORM ORGANISMS	
				TOTAL	SUSP.	DISS.	TOTAL	FAECAL
SN8.0	South Nation River at C.P.R. bridge upstream of Plantagenet	30/11/66	5.6	378	52	326	2,400	2,400
		25/10/67	1.5	330	22	308	930	230
		24/4/68	1.4	322	12	310	155	16
		23/10/68	1.2	366	19	347	250	200
		15/10/69	1.8	300	30	270	8,300	20
		29/4/70	1.4	310	20	290	145	40
		26/5/71	1.4	280	15	265	65	14
SN7.99S	Sewer outfall from Station Street	25/10/67	7.4	658	51	607	110,000+	110,000+
		24/4/68	8.2	948	28	920	11,000+	11,000+
		23/10/68	20.	862	41	821	11,000+	11,000+
		15/10/69	38.	1260	160	1100	99,000	98,000
		29/4/70	5.5	630	25	605	760,000	60,000
		26/5/71	38.	1220	35	1185	8,000,000+	8,000,000+
SN6.8S	Sewer outfall from Nation Street	30/11/66	80.	1168	114	1054	11,000+	11,000+
		25/10/67	150.	1286	182	1104	110,000+	110,000+
		24/4/68	270.	1248	157	1091	11,000+	11,000+
		23/10/68	200.	2172	114	1158	11,000+	11,000+
		15/10/69	190.	1560	180	1380	240,000+	240,000+
		29/4/70	34.	710	50	660	10,000,000+	7,600,000+
		26/5/71	240.	1650	460	1190	6,500,000	4,900,000

APPENDIX I - cont'd

SAMPLE POINT	DESCRIPTION	DATE	5-DAY BOD	SOLIDS			COLIFORM ORGANISMS	
				TOTAL	SUSP.	DISS.	TOTAL	FAECAL
SN6.6 S	Sewer outfall from	30/11/66	47.	840	62	778	11,000+	11,000+
	Concession Street	25/10/67	9.1	7086	6360	726	110,000+	110,000+
		24/4/68	30.	782	41	741	11,000+	11,000+
		23/10/68	275.	1250	123	1127	11,000+	11,000+
		15/10/69	3400.	4680	380	4300	240,000+	240,000+
		29/4/70	300.	1290	370	920	10,000,000+	10,000,000+
		26/5/71	85.	1150	70	1080	2,400,000	1,300,000
SN6.4 S	Sewer outfall at	30/11/66	0.8	714	1	713	43	43
	north side of old	25/10/67	1.5	658	15	643	230	93
	Highway #17	24/4/68	1.2	1804	7	1797	100	36
	bridge							
SN6.3 S	Sewer outfall	30/11/66	8.8	706	36	670	11,000+	11,000+
	south of creamery	26/10/67	40.	536	88	448	110,000+	110,000+
		24/4/68	46.	556	93	463	11,000+	11,000+
		23/10/68	390.	2202	605	1597	11,000+	11,000+
		15/10/69	600.	3200	1430	1770	240,000+	240,000+
		29/4/70	0.4	1260	25	1235	25	0
		26/5/71	260.	1640	900	740	8,000,000+	8,000,000+
SN6.29I	Ditch from	30/11/66	6100.	5936	730	5206	11,000+	11,000+
	Plantagenet	25/10/67	235.	758	202	556	110,000+	110,000+
	Creamery	24/4/68	1800	1738	193	1545	11,000+	11,000+
		23/10/68	290.	682	124	558	11,000+	11,000+
		15/10/69	6500.	6820	400	6420	240,000+	240,000+
		29/4/70	11.	260	60	200	8,000,000	0
		26/5/71	320.	600	100	500	5,300,000	4,000,000

SAMPLE POINT	DESCRIPTION	DATE	5-DAY BOD	SOLIDS			COLIFORM ORGANISMS	
				TOTAL	SUSP.	DISS.	TOTAL	FAECAL
SN6.2S	Sewer outfall from Main Street	30/11/66	106.	1014	112	902	110,000	110,000
		25/10/67	59.	596	100	496	110,000+	110,000+
		24/4/68	42.	538	78	460	11,000+	11,000+
		23/10/68	270.	1168	66	1102	11,000+	11,000+
		15/10/69	260.	1750	320	1430	240,000+	240,000+
		29/4/70	48.	770	55	715	10,000,000+	10,000,000+
		26/5/71	190.	1200	120	1080	8,000,000+	8,000,000+
3	Sailine Creek at upstream village limits	25/10/67	1.4	526	68	458	2,300	230
		24/4/68	6.8	542	57	485	230	78
		23/10/68	6.0	856	108	748	1,800	700
		15/10/69	4.0	5570	160	5410	1,400	1,400
		29/4/70	0.8	420	35	385	690	600
		26/5/71	2.0	1010	60	950	2,700	1,100
7	Sailine Creek at South Nation River	25/10/67	1.8	520	56	484	930	430
		24/4/68	1.8	706	245	461	3,000	340
		23/10/68	3.1	1094	102	992	1,200	600
		15/10/69	6.0	1780	200	1580	90,000	240
		29/4/70	1.0	320	35	285	1,100	240
		26/5/71	2.0	930	50	880	145	66
SN5.8	South Nation River downstream of Plantagenet	30/11/66	2.4	746	74	672	230	230
		25/10/67	2.4	368	34	334	9,300	9,300
		24/4/68	1.7	310	19	291	11,000+	11,000
		23/10/68	1.6	368	39	329	11,000+	3,000
		15/10/69	3.0	360	40	320	85,000	37,000
		29/4/70	0.8	210	35	185	3,900	290
		26/5/71	2.0	290	10	280	37,000	33,000

PLANTAGENET



LEGEND

SN-8.0 - STREAM SAMPLING POINT SHOWING MILEAGE

SN-6.29 I - OUTFALL SHOWING STREAM AND MILEAGE
- TYPE OF OUTFALL

I - INDUSTRIAL WASTE EFFLUENT

S - SANITARY SEWER

ONTARIO WATER RESOURCES COMMISSION

VILLAGE OF PLANTAGENET
WATER POLLUTION SURVEY
1972

SCALE 400 200 0 400 FEET

DRAWN BY : L.L. BROOME	DATE : FEBRUARY, 1966
CHECKED BY : A.D.M.	DRAWING No : 67-19

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